

METHOD FOR THE TRANSMISSION OF INFORMATION IN THE SUBSCRIBER LINE AREA

The invention is directed to a method according to the preamble of patent claim 1.

5 The transmission of information between subscriber and the local exchange respectively allocated to the subscriber usually ensues via a subscriber line network that usually comprises a plurality of subscriber lines. In the Prior Art, these are composed of traditional copper leads (a/b leads). The individual subscriber lines are thereby bundled and brought to the
10 appertaining local exchange.

 Only voice information were transmitted via the subscriber line network in the past, whereby the transmission of data and information of different natures has been gaining in significance in recent years. Whereas the transmission of voice information can be implemented with a relatively
15 small bandwidth, far more bandwidth is required for the transmission of data. However, separate networks had to be installed therefor.

 The desire for future transmission purposes is therefore to also use the subscriber line networks that already exist for the transmission of data and information of higher bit-rate services. However, separate transmission
20 methods must be developed therefor. Such transmission methods are, for example, what are referred to as the xDSL (ADSL, HDSL, etc.) methods. The copper leads of the subscriber line network can thus be utilized up to transmission rates in the Mbit/s range on the basis of suitable transmission-oriented measures.

25 The ADSL transmission method is asymmetrically designed. This means that a higher bit rate can be selected in a privileged direction at the expense of a lower bit rate in the opposite direction. For example, up to 6 Mbit/s can be sent to the subscriber proceeding from the network and 2 Mbit/s

can be sent from the subscriber to the network. The disadvantage of such a procedure is to be seen therein that the privileged direction cannot be dynamically changed once it has been selected.

5 The invention is based on the object of disclosing a way of how a bidirectional transmission between network and subscriber can be flexibly controlled.

It is particularly advantageous in the invention that an interface is provided between the application level and the physical transmission to which control data are supplied by evaluation of protocols. This involves the
10 advantage that the privileged direction set by employing an xDSL method such as, for example, ADSL can be reconfigured by higher protocols.

Advantageous developments of the invention are recited in the subclaims.

The invention is explained in greater detail below on the basis of an
15 exemplary embodiment.

It is provided in accord therewith to provide an interface between the application level and the physical transmission. The interface should preferably be arranged in the local exchange. Control data are offered via this interface with which the privileged direction of the transmission method
20 ADSL can be reconfigured. The reconfiguration is thereby triggered by higher protocols.

Coming into consideration as higher protocols are, for example, the signalling, the evaluation of resource management cells in ATM networks or 'P' flow detection' mechanisms. When the evaluation of a higher protocol
25 level yields the need for a change of the required bit rate in a specific direction, then the xDSL link is correspondingly reconfigured. The physics, i.e. the copper leads are thus always optimally adapted and utilized according to the need. Dependent on the type of applied use, thus, the network-to-subscriber direction or the subscriber-to-network direction will

have the higher bit rate on a case-by-case basis. Symmetrically divided bit rates are thereby also possible.

In the case of the signalling, it is provided in ATM-based networks to request a specific transmission rate from the network with the signalling.

- 5 These signalling protocols allow the use of asymmetrical connections. When, for example, the case of a file download from a server is considered, then a higher transmission capacity is required from the network toward the subscriber. When, in contrast, for example, a video telephony is requested, then, in particular, the same, possibly high transmission capacity will be
10 needed for both directions. In this example, the evaluation of the signalling protocols automatically adapts the physical transmission rate.

- In the case of transmission of information with ABR traffic, it is provided to interpret the RM cells in, for example, the local exchange. Information about the traffic load of the network (congestion indication
15 signals) are contained in the RM cells. A setting of the bandwidth via the interface between the application level and the physical transmission is undertaken with this information.

- In the case of the transmission of information via the Internet, reconfigurations can be undertaken via IP' flow detection' mechanisms. It is
20 likewise possible to set the bandwidth dependent on the employed protocol of the application layer.

- The method disclosed here can be combined with known adaption methods (i.e., automatic identification of the maximally possible transmission rate via existing leads). Further, the basic idea presented here can also be
25 expanded to other areas, for example to transmission methods that are not line-bound.